Inventor: BROWN et al.
Docket No.: 08436.0073USC1
Title: IMPROVEMENTS TO MECHANICAL COMPOSTING
Attorney Name: Brian H. Batzli
Phone No.: 612.336.4755
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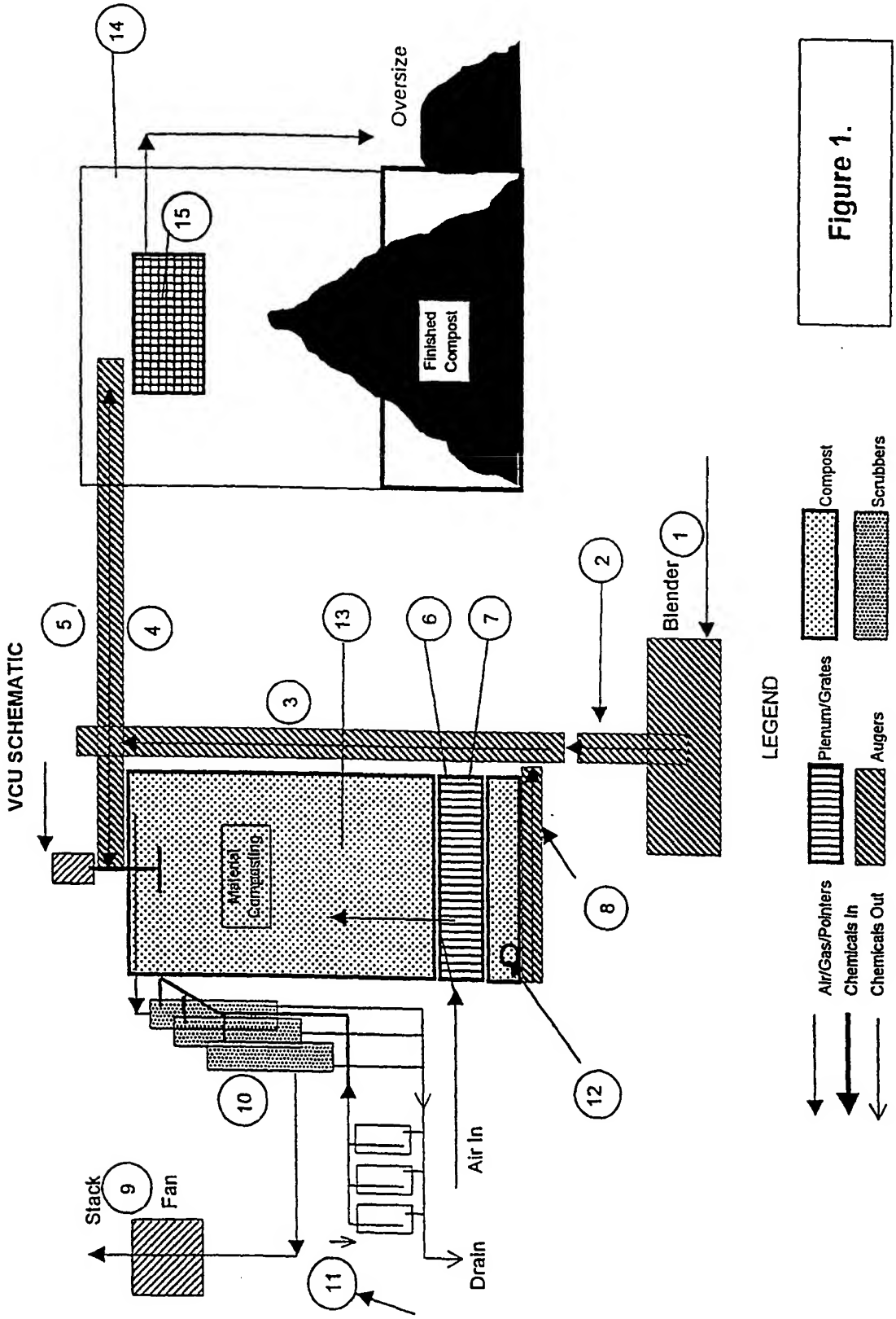

Figure 1.

Table 1a.

VCU IN VESSEL COMPOST SYSTEM
Physical And Thermodynamic Model

VCU # Panels (One Side)	2.2	m
Putrescible % of Total	50	%
Putrescible % Solids (w/w)	25	%
Greenwaste Moisture Content	50	%
Primary Chamber Output MC	30	%
Bulk Density Greenwaste Input	0.30	
Density Sludge Dry Solids	0.83	
Ambient Temperature	14	Deg C
Column Zone Temperatures		
Zone A Temp(Measured)	80	Deg C
Zone B Temp(Measured)	75	Deg C
Zone C Temp(Measured)	67	Deg C
Zone D Temp(Measured)	45	Deg C
Ultimate Analysis For C & H		
Carbon %	49	%
Hydrogen %	9	%
Average Temperature Rise	52.75	DegC
Ambient	14	DegC

VCU MODEL 20S

Client:	
NSW University	
Code:	UNI
File Version:	2

Column Hgt	5	m
Product MC	45	%
Condensate	8	L/m3/day
Cycle Time	14	Days

126.95 Degf

57.2 Degf

Table 1b.

VCU IN VESSEL COMPOST SYSTEM

	VCU DATA		
Volume (Main Chamber)	24 m3	24 m3	1.73
Daily Mass Greenwaste (wet)	1,162 lbs	519 kg	(m3/day)
Daily Mass Sludge (wet)	1,162 lbs	519 kg	
Daily Mass Total (Wet)	2,323 lbs	1,037 kg	
Plenum Loading	3.24 psi	0.29 Kg/cm2	Total Ground
Mass of Water	1,452 lbs	648 kg	Loading(kg)
Dry Mass Total	871 lbs	389 kg	13,501
Overall Moisture Content	62.50 % (w/w)	62.50 % (w/w)	
Total Energy In Column	2,773,766 btu	2,926 MJ	31,213
Energy Use (Heating/Evaporation)	81,519 btu/hr	23 Kw/hr	67,932
Oxygen For Microbe Energy	25.36 lbs/hr	11.32 Kg/hr	
Oxygen Excess	0.76 lbs/hr	0.34 Kg/hr	
Total Oxygen In	26.12 lbs/hr	11.66 Kg/hr	
Nitrogen In	98 lbs/hr	44 Kg/hr	
Total Air Required	124.39 lbs/hr	55.53 Kg/hr	
Specific Air Volume Per Hour	64.17 scf/m3	1.89 scm/m3	634
Fan Spec @ 3" swg	42.63 scfm	1.25 scm/min	0.05
Daily Water Input	1,452 lbs/day	648 Kg/day	
Daily Water Evaporation	1,149 lbs/day	513 Kg/day	5.65%
Daily OD Solids Loss	163 lbs/day	73 Kg/day	1.34%
Predicted Stack Temperature	63 Degf	17 DegC	
Column Velocity	0.842 f/min	0.259 m/min	
Column Velocity	0.014 f/sec	0.004 m/sec	
OD Solids Loss Rate	7 lbs/hr	3 Kg/hr	
OD Solids Loss	7 lbs/m3/Day	3 kg/m3/D	
Water Reduction	47 lbs/m3/Day	21 kg/m3/D	
Daily Drop	1.53 m3 (Est)	452 kg	

Check Digits	355.13	0.158			6.79
Microbe Fuel Consumed (Primary Chamber)	lbs/hr	moles	scfm	acfm	
Carbon	5.435	0.453			
Hydrogen	1.359	0.679			
Oxygen Required	25.361	0.793	4.742	5.382	Stack Gas
Excess Oxygen	0.761	0.024	0.142	0.161	0.44%
(Evaporation) H2O	47.854	2.659	15.907	18.052	
(Oxidation) H2O	10.869	0.604	3.613	4.100	
CO2	14.492	0.329	1.971	2.237	8.41%
N2	98.270	3.510	20.999	23.831	
Stack Products From Oxidation	172.246	7.125	42.632	48.220	